

Current Use of Nephelometric Quantification of Serum Free Light Chains (FLCs) in the Management of Plasma Cell Dyscrasias, and the Potential Benefits of Point-Of-Care Testing

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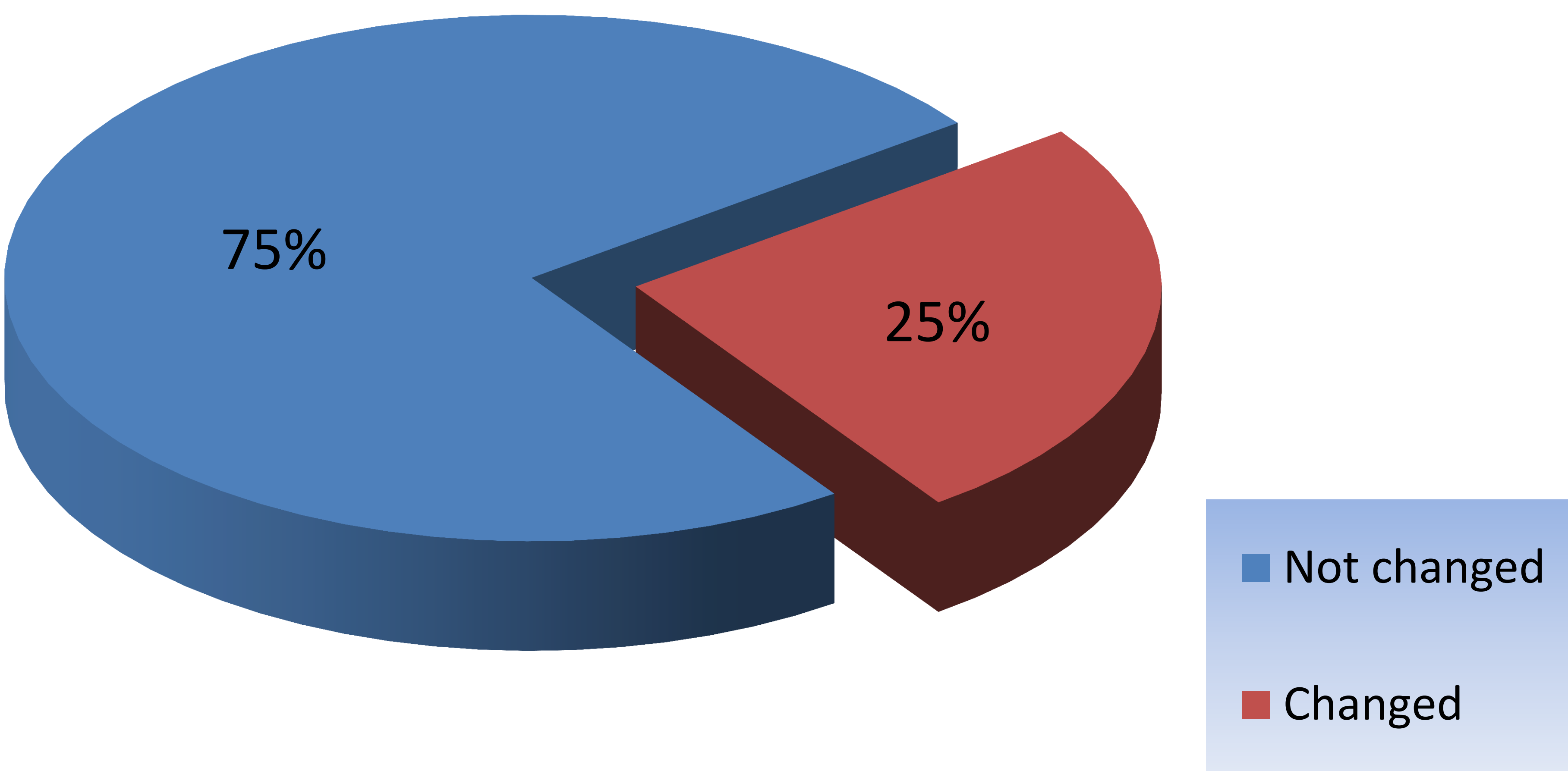
OBJECTIVES

Background
Quantitative nephelometric assays detecting polyclonal sheep anti-sera and serum FLCs (e.g. Freelite®) are the gold standard method for monitoring FLC secretion from myeloma cells, but are only available in central laboratories. The frequent delay between venepuncture and assay results can affect diagnosis, treatment decisions and patient communication. Second generation point-of-care assays have been developed using monoclonal antibodies to FLCs, producing results in 10 minutes (e.g. Seralite®). This study investigates potential impact on care of patients with plasma cell dyscrasias.

Aims

- Assess current practice in FLC monitoring
- Review potential impact of rapidly available point-of-care FLC testing

Number of patients whose treatment would have been altered at some point of their disease by the availability of up to date FLC results



CONCLUSIONS

A point-of-care assay for serum FLCs would offer benefit in the rapid diagnosis and follow-up of patients with plasma cell dyscrasias, enabling clinicians to make up-to-date decisions on treatment and communication. This could reduce patient exposure to ineffective, expensive, toxic chemotherapy, whilst allowing rapid prevention of end-organ damage in progressive disease

METHODS

This retrospective study analysed blood results and patient records from FLC quantification request samples sent to the Royal Devon and Exeter Hospital over 2 years from October 2012.

RESULTS

SAMPLE

- 3,341 FLC requests sent to the RD&E
- 596 requests included in this study (18%)

PATIENT DEMOGRAPHICS

- 83 patients
- Median age 72 (42-89)
- Frequent diagnoses:
 - Myeloma 45%
 - MGUS 35%
 - Lymphoplasmacytic Lymphoma 5%
- 90.3% of samples were from patients with known plasma cell dyscrasias

FLC RESULT SIGNIFICANCE

- The median time between venepuncture and review of results in clinic was 28 days (range 5-364)
- 70 FLC results were significantly changed compared to the previous result (11.7%)
- 55 of those altered results coincided with significant change in paraprotein or deterioration in end-organ function (9.23%)

CONSULTATIONS

- A rapidly available SFLC result would have changed what the patient was told in consultations on 71 occasions (11.9%)
- This would have affected 34 of the 83 patients included in this study (40.9%)

MANAGEMENT

- Rapidly available results would have altered patient management on 21 occasions (3.5% of data points)
- This would have affected the management of 25.3% of patients.